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CONDUCTING A PRELIMINARY WORLD WIDE WEB SEARCH FOR ATTRIBUTES OF A PRODUCT THROUGH PREDETERMINED SEARCH QUERIES TO PREDETERMINED DATABASE WEB SITES TO PROVIDE A PURCHASE PROFILE OF THE PRODUCT OFFERED FOR SALE BY A WEB PAGE

Technical Field

The present invention relates to computer managed communication networks, such as the World Wide Web (Web), and particularly to ease of use of interactive computer controlled display interfaces to such networks for improving user shopping on the Web.

Background of Related Art

The last decade has been marked by a technological revolution driven by the convergence of the data processing industry with the consumer electronics industry. The effect has, in turn, driven technologies that have been known and available but relatively quiescent over the years. A major one of these technologies is the Internet or Web related distribution of documents, media and files. The convergence of the electronic entertainment and consumer industries with data processing exponentially accelerated the demand for wide ranging communication distribution channels, and the Web or Internet, which had quietly existed for over a generation as a loose academic and government data distribution facility, reached "critical mass" and commenced a period of phenomenal expansion. With this expansion, businesses and consumers have direct access to a virtually infinite number of Web documents. In addition, Hypertext Markup Language (HTML), which had been the documentation language of the Internet or Web

for years, offered direct links between pages and other
documentation on the Web and a variety of related data
sources of text and images. This even further exploded
the use of the Web. It was now possible for the Web
5   browser or wanderer to literally spend hours going
through document after document and accompanying media
events in often less than productive excursions through
the Web. These excursions often strain the user's time
and resources.

10   In addition, this rapid expansion of the Web has
brought in hundreds of millions of Web users, many of
whom have relatively little computer skills and
sophistication. Consequently, it is critical to the
continued expansion of the Web that access to the Web be
15   as simple as possible for the unskilled users and
transparent to any problems encountered in operations
needed to access requested Web documents. This
simplicity in interfacing with the Web must be maintained
despite the fact that the rapidly expanding demand for
20   Web facilities and resources has strained the
communication capacity and resources of the Web.

A major area of complexity and potential confusion
to the less sophisticated user is in trying to make
purchases of goods and services through the Web. Selling
25   to consumers over the Web still remains an E-Commerce
industry of great potential, but with limited and often
awkward execution. The major questions that concern
potential purchasers of products on the Web through Web
pages are: 1) How reliable is the Web site offering
30   products through this Web page?; 2) How good and reliable
is the product which I am considering?; and 3) Am I
getting the product at a reasonable price, i.e. a
shopping comparison of the product? In order for Web

page product purchasing to continue to expand at the
current or increased rates, Web page developers are
continually striving to make Web product purchasers feel
more secure and comfortable with their purchases.

5 Summary of the Present Invention

The present invention provides a system for products
sold over the Web which satisfy user concerns about Web
site and Web product performance and reliability, as well
as product price comparisons to satisfy user cost/value
10 concerns. In its provision of this information, the
present invention goes well beyond satisfying the above
user reliability concerns. The invention provides the
potential purchaser with a purchase profile of the
product that is quicker and easier to obtain, and
15 provides more comprehensive data about the products and
their sources than any information which a user may
obtain about products purchased over the counter from
real world stores and like businesses. Thus, the present
invention minimizes the negative aspects of shopping on
20 the Web while maximizing the positive advantages of Web
shopping relative to over-the-counter shopping.

Accordingly, the present invention provides in a Web
communication network with user access through a
plurality of data processor controlled user interactive
25 receiving display stations, a system for buying products
offered from Web sites comprising means at a receiving
display station for displaying a Web page accessed from a
Web site; means for selecting a product offered for sale
from said Web page; means for storing at said receiving
30 station, a set of predetermined search queries
respectively to each of a set of Web database sites for
data related to attributes of a selected product; and

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means responsive to a selection of a product for sending
said search queries to said Web database sites to thereby
provide a purchase profile of the product. The means for
sending the search queries may be set up so as to be

5   automatically responsive to said selection of the
product.

The queries are set up to trigger very specific or
"narrow band" searches to very specific predetermined
databases for very specific information. Such databases

10   may include: a database Web site providing data on the
quality of the Web sites offering products; a database
Web site providing data on the quality of the selected
product; and a database Web site providing data on the
comparative price of the selected product at a plurality

15   of Web sites offering the product.

Most of these functions may be carried out in a Web
browser at the user's receiving display station or Web
station. The browser may include the means for
displaying a Web page accessed from a Web site; the means

20   for selecting a product offered for sale from said Web
page; the means for storing a set of predetermined search
queries respectively to each of a set of Web database
sites for data related to attributes of a selected
product; and the means responsive to a selection of a

25   product for sending said search queries to said Web
database sites.

The means for storing a set of predetermined search
queries; and the means responsive to a selection of a
product for sending said search queries to said Web

30   database sites may be made available as a plug-in program
for any standard browser program.

Brief Description of the Drawings

The present invention will be better understood and its numerous objects and advantages will become more apparent to those skilled in the art by reference to the following drawings, in conjunction with the accompanying specification, in which:

Fig. 1 is a block diagram of a data processing system including a central processing unit and network connections via a communications adapter that is capable of functioning as a user interactive Web station for receiving and transmitting Web pages;

Fig. 2 is a generalized diagrammatic view of a Web portion showing how Web sites providing Web pages selling products and services may be accessed to and from the Web stations through browser applications as well as how various databases on the Web may be searched through search queries initiated through these browser applications;

Fig. 3 is a diagrammatic view of a Web page offering to sell products displayed at a receiving display station after a user has selected products and loaded them into his shopping cart;

Fig. 4 is a diagrammatic view of a Purchase Profile Web page presented to a user who has selected products to be purchased in order to aid the user in deciding whether to finalize his purchase of the products;

Fig. 5 is an illustrative flowchart describing the setting up of the process of the present invention for providing a user a purchase profile in order to aid the user in deciding whether to finalize his purchase of selected products; and

Fig. 6 is a flowchart of an illustrative run of the process set up in Fig. 5.

Detailed Description of the Preferred Embodiment

Referring to Fig. 1, a typical data processing
terminal is shown which may function as a basic computer
controlled network receiving terminal used in
5   implementing the present invention for providing a
purchase profile Web page presented to a user who has
selected products to be purchased in order to aid the
user in deciding whether to finalize his purchase of the
products. A central processing unit (CPU) 10, such as
10   one of the PC microprocessors or workstations, e.g. RISC
System/6000™ series available from International Business
Machines Corporation (IBM), or Dell Corp.'s PC
microprocessors, is provided and interconnected to
various other components by system bus 12. An operating
15   system 41 runs on CPU 10, provides control and is used to
coordinate the function of the various components of Fig.
1. Operating system 41 may be one of the commercially
available operating systems such as IBM's AIX 6000™ or
Microsoft's Windows98™ or WindowsNT™, as well as UNIX and
20   other IBM AIX operating systems. Application programs
40, controlled by the system, are moved into and out of
the main memory Random Access Memory (RAM) 14. These
programs include the program of the present invention to
be subsequently described in combination with any
25   conventional Web browser, such as the Netscape 3.0™ or
Microsoft's Internet Explorer™. A Read Only Memory (ROM)
16 is connected to CPU 10 via bus 12 and includes the
Basic Input/Output System (BIOS) that controls the basic
computer functions. RAM 14, I/O adapter 18 and
30   communications adapter 34 are also interconnected to
system bus 12. I/O adapter 18 may be a Small Computer
System Interface (SCSI) adapter that communicates with
the disk storage device 20. Communications adapter 34

interconnects bus 12 with an outside network enabling the
data processing system to communicate with other such
systems over a Local Area Network (LAN) or Wide Area
Network (WAN), which includes, of course, the Web or
5   Internet. The latter two terms are meant to be generally
interchangeable and are so used in the present
description of the distribution network. I/O devices are
also connected to system bus 12 via user interface
adapter 22 and display adapter 36. Keyboard 24 and mouse
10   26 are all interconnected to bus 12 through user
interface adapter 22. It is through such input devices
that the user may interactively relate to the programs
for shopping on the Web according to the present
invention. Display adapter 36 includes a frame buffer
15   39, which is a storage device that holds a representation
of each pixel on the display screen 38. Images may be
stored in frame buffer 39 for display on monitor 38
through various components, such as a digital to analog
converter (not shown) and the like. By using the
20   aforementioned I/O devices, a user is capable of
inputting information to the system through the keyboard
24 or mouse 26 and receiving output information from the
system via display 38.

Before going further into the details of specific
25   embodiments, it will be helpful to understand from a more
general perspective the various elements and methods that
may be related to the present invention. Since the major
aspect of the present invention is directed to Web pages
transmitted over global networks, such as the Web or
30   Internet, an understanding of networks and their
operating principles would be helpful. We will not go
into great detail in describing the networks to which the
present invention is applicable. For details on Web

nodes, objects and links, reference is made to the text, <u>Mastering the Internet</u>, G. H. Cady et al., published by Sybex Inc., Alameda, CA, 1996; or the text, <u>Internet: The Complete Reference, Millennium Edition</u>, Margaret

5   Young et al., Osborne/McGraw-Hill, Berkeley, CA, 1999. Any data communication system that interconnects or links computer controlled systems with various sites defines a communications network. Of course, the Internet or Web is a global network of a heterogeneous mix of computer

10   technologies and operating systems. Higher level objects are linked to the lower level objects in the hierarchy through a variety of network server computers.

Web documents are conventionally implemented in markup languages such as the HTML language, which is

15   described in detail in the text entitled <u>Just Java</u>, Van der Linden, 1997, SunSoft Press, particularly at Chapter 7, pp. 249-268, dealing with the handling of Web pages; and also in the above-referenced <u>Mastering the Internet</u>, particularly pp. 637-642, on HTML in the formation of Web

20   pages.

In addition, aspects of this invention will involve Web browsers. A general and comprehensive description of browsers may be found in the above-mentioned <u>Mastering the Internet</u> text at pp. 291-313. More detailed browser

25   descriptions may be found in the above-mentioned <u>Internet: The Complete Reference, Millennium Edition</u> text, Chapter 19, pp. 419-454, on the Netscape Navigator; Chapter 20, pp. 455-494, on the Microsoft Internet Explorer; and Chapter 21, pp. 495-512, covering Lynx,

30   Opera and other browsers.

Web pages are generally located on the Web and database searches are conducted through search engines. As described in the above-mentioned <u>Internet: The</u>

Complete Reference, Milleniun Edition text, pp. 395 and
522-535, search engines use keywords and phrases to query
the Web for desired subject matter. The search engine
normally uses a search agent called a "spider" that looks

5   for information on Web pages. Such information is
indexed and stored in a general database. In carrying
out its search, the search engine looks through the
general or specific database for matches to keywords
subject to the engine syntax. The search engine then

10 presents to the user a list of the Web pages it
determines to be closest to the requested query. Some
significant search engines are: AltaVista, Infoseek,
Lycos, Magellan, Webcrawler and Yahoo. In carrying out
the present invention, Web pages selling products may be

15 found through the general database. However, the
predetermined search queries to provide the purchase
profile are directed as "narrow band" searches to
specific predetermined databases.

A generalized diagram of a portion of the Web to

20 which the computer controlled display terminal 57 used
for Web page receiving during searching or browsing is
connected as shown in Fig. 2. Computer display terminal
57 may be implemented by the computer system setup in
Fig. 1 and connection 58 (Fig. 2) is the network

25 connection shown in Fig. 1. For purposes of the present
embodiment, computer 57 serves as a Web display station
and has received displayed Web page 56. Reference may be
made to the above-mentioned Mastering the Internet, pp.
136-147, for typical connections between local display

30 stations to the Web via network servers, any of which may
be used to implement the system on which this invention
is used. The system embodiment of Fig. 2 has a host
dial-up connection. Such host dial-up connections have

been in use for over 30 years through network access
servers 53 that are linked 61 to the Web 50. The
servers 53 may be maintained by a service provider to the
client's display terminal 57. The server 53 is accessed
5   by the client terminal 57 through a normal dial-up
telephone linkage 58 via modem 54, telephone line 55 and
modem 52. The HTML file representative of the Web page
56 has been downloaded to display terminal 57 through Web
access server 53 via the telephone line linkages from
10   server 53, which may have accessed them from the Internet
50 via linkage 61. The Web browser program 59 operates
within the display terminals 57 to control the
communication with the Web access server 53 to thereby
download and display the accessed Web pages 56 on
15   terminal 57. In carrying out the provision of a pre-
purchase profile of the products that the user is
selecting in accordance with the present invention, the
browser controls the storage in association with display
terminal 57 of the set of predetermined search queries to
20   the predetermined databases that the user has selected to
provide him with his desired pre-purchase profile. Thus,
after the browser has provided Web pages from Web sites
like either site 48 or site 49, and as will be
hereinafter described in greater detail, when the user is
25   about to check out, i.e. make a purchase, then the
browser initiates the stored search queries to the
predetermined databases on the Web, such as databases
Bizrate 60, CNet 62 and MySimon 63, and provides the
Purchase Profile as a Web page 56 at receiving display
30   terminal 57.
     With this setup, the present invention, which will
be subsequently described in greater detail with respect
to Figs. 3 and 4, will be carried out using Web browser

59.   Search engine 51 accesses Web pages from sites 48 or
49 and provides such pages to the user at terminal 57.
Fig. 3 shows a Web page 65 conventionally displayed on
screen 56 of terminal 57.   The Web access server 53 uses

5   one of the previously described search engines 51 to
access via the Web 50 the desired sequence of Web pages
from appropriate Web resources, such as sites 48 and 49.
The user in this illustration has been shopping in pages
from a Web site entitled E-Mall 67 and has selected two

10   items: a Jester 4-Dr File 69 (description 70) and a BC
17 Inch Monitor 68 (description 71), both of which are in
his shopping cart.   Please note that for clearness in
illustration, Web page 65 has been cleared of all
extraneous items.   The user then presses check out button

15   72 which initiates the above-mentioned Browser search of
databases 60, 62 and 63 through search engine 51 to
provide the Purchase Profile Web page 75 shown in Fig. 4.
There are ratings 76 of the "E-Mall" Web site itself
obtained through two Web site rating databases,

20   "Gomez.com" and "Bizrate.com", ratings 77 of the two
products that are being considered for purchase
respectively from ConsumerReport.com and CNet.com, as
well as comparison shopping 78 services 79 and 82 for the
two products.   The user now has an opportunity to review

25   these purchase profiles for the two products.   He may
then finalize the purchase by pressing the Buy buttons 81
and 82 for each product.   If the user selects the Buy
button, the browser will then forward all information
necessary for billing and shipping to the appropriate Web

30   page site.   If the user decides not to buy, then nothing
is sent to the Web page site and the purchase transaction
is terminated.

Now, with reference to Figs. 5 and 6, we will describe a process implemented by the present invention in conjunction with the flowcharts of these figures. Fig. 5 is a flowchart showing the development of a

5 process according to the present invention for presenting a user purchasing products off the Web with a pre-purchase profile of the products. With reference to Fig. 5, first, process step 83, a conventional Web browser program is provided at the Web page receiving display

10 station, e.g. the computer controlled display of Fig. 1 or display station 57 of Fig. 2, for accessing Web pages from the Internet. The browser is set up to provide the capability for the user to select products offered for sale on accessed Web pages, step 84. Now, in order to

15 provide the user with a purchase profile of products being purchased, the browser is provided with the capability to have stored therewith a set of predetermined search queries to each of a set of predetermined Web database sites for data related to

20 attributes of the selected products, step 85. The browser is provided with the further capability of initiating Web searches of said stored predetermined queries to their respective databases, step 86. The browser is set up to provide the results of the above

25 searches to the user as a Web page presenting a Purchase Profile of the searched attributes as a preliminary to a user purchase of a product, step 87.

It should be noted that while the program for creating the purchase profile through the searching with

30 predetermined search queries to predetermined Web databases has been described as an integral part of a Web browser, the program may also be implemented as a plug-in program from any of the standard Web browsers. The plug-

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in could be set up so as to provide a set of
predetermined search queries to a set of predetermined
Web database sites. Such plug-ins would provide the user
with the option of adding search queries or Web database

5 sites to the default sites or queries provided by the
plug-in. The development of Plug-ins for browsers are
described in the text, <u>The Web Navigator</u>, Paul Gilster,
John Wiley & Sons, New York, 1997 at pages 145-180.

The running of the process will now be described

10 with respect to Fig. 6. First, step 90, a determination
is made as to whether the user has selected a Web page.
If No, the process is returned to step 90, and the
selection of a Web page is awaited. If Yes, the browser
gets the Web page, step 91. A determination is then made

15 as to whether the user has selected a product for sale
from a Web page, step 92. If No, the process is returned
to step 92, and the selection of a product is awaited.
If Yes, the browser loads the selected product into the
conventional user's cart, step 93, after which a further

20 determination is made as to whether the user has selected
another product, step 94. If Yes, the process is
returned to step 93 where the browser loads the next
selected product into the cart and again a determination
is made, step 94 as to whether the user has selected

25 another product. If this time the answer from step 94 is
No, another product has not been selected, then a further
determination is made, step 95 as to whether the user has
clicked on the check-out button. If No, the process is
returned to step 94 and the selection of another product

30 is awaited. However if in step 95, the user decides to
check out, then the browser commences the predetermined
searches to the predetermined database Web sites that
have been stored in connection with the browser, step 96.

Then, step 97, the browser presents the search results to
the user in the form of a purchase profile. With the
profile available, the user is then given the opportunity
to complete the purchase transaction so as to buy one or

5   more of the products, step 98. If Yes, then the browser
sends all of the appropriate billing and shipping data to
the Web site of the page, step 99, and the purchase
transaction is complete. At this point or if the
decision from step 98 is No, then a determination may

10   conveniently be made as to whether the session is over,
step 100. If Yes, the session is exited. If No, the
process is returned to initial step 90 via branch "A",
and the selection of another Web page is awaited.

        One of the preferred implementations of the present

15   invention is as a routine in an operating system made up
of programming steps or instructions resident in RAM 14,
Fig. 1, during computer operations. Until required by
the computer system, the program instructions may be
stored in another readable medium, e.g. in disk drive 20,

20   or in a removable memory, such as an optical disk for use
in a CD ROM computer input or in a floppy disk for use in
a floppy disk drive computer input. Further, the program
instructions may be stored in the memory of another
computer prior to use in the system of the present

25   invention and transmitted over a LAN or a WAN, such as
the Internet, when required by the user of the present
invention. One skilled in the art should appreciate that
the processes controlling the present invention are
capable of being distributed in the form of computer

30   readable media in a variety of forms.

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Although certain preferred embodiments have been shown and described, it will be understood that many changes and modifications may be made therein without departing from the scope and intent of the appended
5   claims.